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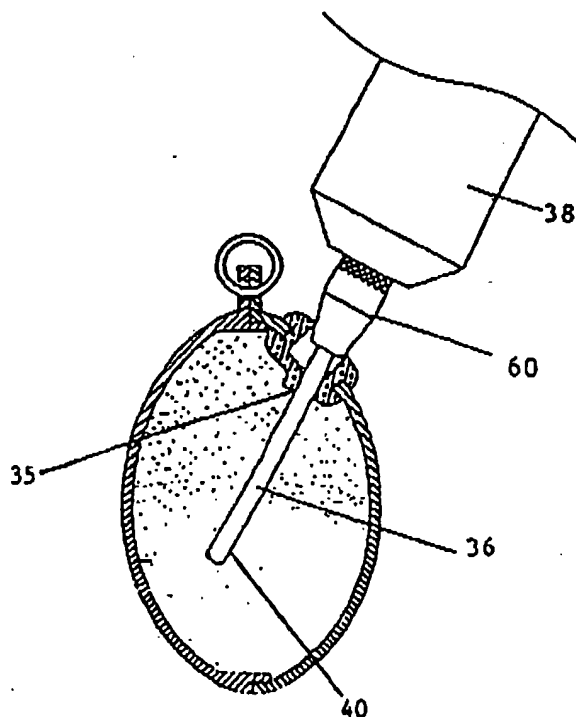
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(54) Title: DEVICE FOR LUBRICATION AND/OR STORAGE OF AN INFLATION NEEDLE



(57) Abstract: A small football or soccer ball shaped container (12) for lubricating an external longitudinal surface of an inflation needle (36) is provided with a cord wearable around the neck of a user. The container has an opening (14) at an upper end for passage (35) therethrough of at least a portion of an inflation needle; and a closure means (32) or grommet (24) with circular rubber sheet (32) moveable from a closed position which at least partially prevents passage of liquid or solid lubricant or lubricating particles such as silicone through the opening. The closure means in the open position allows equilibration of gas pressure within the container with external gas pressure. Another embodiment is an inflation needle storage device comprising a body forming a passage and having resiliently flexible retaining means to resiliently deform upon insertion of the needle into the passage.

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DT09 Rec'd PCT/PTO 27 SEP 2004**DEVICE FOR LUBRICATION AND/OR STORAGE OF AN INFLATION NEEDLE****Field of invention**

The present invention relates to (a) inflation of inflatable articles such as inflatable footballs, soccer balls and the like which are inflated by insertion of an inflation needle through a valve of the aforementioned inflatable articles, and (b) storage of inflation needles.

Background of the invention

Regarding (a), inflatable articles such as inflatable footballs, soccer balls and the like are typically inflated via a valve which is designed to prevent the escape of gas from within the inflatable article both while the inflatable article is being inflated and after inflation. The valve therefore has to seal against an external cylindrical surface of an inflation needle which has been inserted therethrough for the purpose of inflating the inflatable article. The valves of inflatable articles are typically formed of a rubber like compound and because they are required to seal against an external cylindrical surface of an inflation needle during inflation of the inflatable article it is typically difficult to insert an inflation needle into an inflatable article.

British patent specification GB2138015A addresses the problem regarding the difficulty of insertion of an inflation needle into an inflatable article by the provision of an alternative valve. The alternative valve is designed to self lubricate a passage through which an inflation needle is inserted upon withdrawal of the inflation needle from the passage. The self-lubrication makes it easier for subsequent insertion of an inflation needle.

US patent 4043356 has addressed the problem of insertion of an inflation needle into an inflatable article by providing an alternative inflation needle. The alternative inflation needle is made from a material which includes a lubricant to assist entry of the inflation needle into an inflatable article.

In order to address the problem of insertion of an inflation needle into an inflatable article it is therefore necessary to either use an inflatable article which includes the alternative valve of GB2138015A or use the alternative inflation needle of US4043356. It is therefore desirable to address the problem of insertion
5 of an inflation needle into an inflation article without reliance upon an inflation needle or valve which has been specifically designed to make passage of an inflation needle through an inflation valve easier.

Regarding (b), inflation needles can be vulnerable to damage or breakage either when attached to a pump or when removed from the pump and stored in a
10 location and/or manner in which they may be damaged or broken. Furthermore, inflation needles are typically sold in a disposable package which is formed of cardboard and plastic and are sometimes sold in pairs. If the disposable package is broken for removal of one of the pair of inflation needles, the remaining inflation needle can be easily lost and/or damaged.

15 It is therefore desirable to provide an inflation needle storage device which is suitable for storing one or more inflation needles in a manner which at least partially addresses one or more of the above problems regarding inflation needle storage.

Summary of the invention

20 In a first aspect the present invention provides a container adapted for lubricating an external longitudinal surface of an inflation needle which is suitable for inflating articles having a resiliently flexible, substantially gas tight valve, said container comprising an opening for passage therethrough of at least a portion of the longitudinal length of said inflation needle, in a direction substantially aligned
25 with a longitudinal axis of said inflation needle, and closure means for at least partially preventing passage of a liquid or solid lubricant through said opening, the closure means being movable from a closed position which at least partially prevents passage of liquid or solid lubricant through the opening, to an open position to allow insertion of at least a portion of said inflation needle into said
30 container via said opening, wherein, in said open position, said closure means is

arranged to substantially allow equilibration of gas pressure within the container with the gas pressure external of the container and at least partially prevent passage of liquid or solid lubricant through said opening, while at least a portion of said inflation needle is inserted through said opening.

- 5 Suitably, said container is in the shape of an inflatable article, such as an inflatable football or soccer ball.

Suitably, said opening comprises a mouth of said container.

- 10 Suitably, said closure means comprises a sealing member having a resiliently flexible portion which is moveable between said closed and open positions.

Suitably, said resiliently flexible portion is arranged to at least partially seal against another portion of said sealing member, when in said closed position, to at least partially prevent passage of liquid or solid lubricant through said opening.

- 15 Alternatively, said resiliently flexible portion may be arranged to at least partially seal against a portion of said container, when in said closed position.

- 20 Alternatively, said closure means comprises a cover which is arranged to attach to said mouth of said container, a portion of said cover being arranged to move from said open position to said closed position to at least partially sealingly engage said container to at least partially prevent passage of liquid or solid lubricant through said opening.

Alternatively, said cover comprises a lid having a resiliently flexible portion which is arranged to move from said open position to said closed position to at least partially sealingly engage another portion of said lid and/or said mouth to at least partially prevent passage of liquid or solid lubricant through said opening.

- 25 Suitably, said closure means comprises a valve.

Suitably, said valve is attached to said mouth of said container.

Suitably, said valve is at least partially removably attached to said mouth of said container.

Suitably, said valve includes a groove formed between two outwardly
5 projecting flanges, said outwardly projecting flanges being arranged to abut outer and inner surfaces of a wall of said container, adjacent said mouth of said container.

Suitably, said valve further comprises a resiliently flexible flap which is arranged to move to said open position upon application of a predetermined force
10 to provide an opening in said valve for passage therethrough of at least a portion of said inflation needle.

Suitably, said resiliently flexible flap is arranged to extend inwardly of the container when in said open position.

Suitably, said resiliently flexible flap is arranged to move to said closed
15 position and at least partially sealingly engage a portion of said valve upon withdrawal of said inflation needle from said container.

Suitably, said resiliently flexible flap comprises a rubber sheet.

Suitably, said valve includes a grommet formed of resiliently flexible material which may include rubber or a rubber like compound.

20 Suitably, said container is at least partially filled with a liquid and/or solid lubricant.

Suitably, said container is at least partially filled with lubricant absorbent material which is arranged to absorb and therefore disperse a liquid lubricant throughout at least part of an internal volume of said container.

The liquid absorbent material is preferably arranged to fill greater than 50% of the internal volume of said container.

Suitably, said lubricant absorbent material includes wadding.

Alternatively, said container includes particles which are arranged to fill at
5 least a portion of said internal volume of said container and disperse liquid and/or solid lubricant throughout at least a portion of said internal volume of said container.

Suitably, said particles are arranged to fill approximately 75% of said internal volume of said container.

10 Alternatively, said container is at least partially filled with lubricating particles at least partially comprising a solid lubricant.

The lubricating particles may be sized to prevent passage through said opening of said container when said closure means is in said open position.

The container may include opening means for opening of the container to
15 enable capturing of said lubricating particles within said container.

In a second aspect the present invention provides a container adapted for lubricating an external longitudinal surface of an inflation needle which is suitable for inflating articles having a resiliently flexible substantially gas tight valve, said container comprising an opening for passage therethrough at least a portion of the
20 longitudinal length of said inflation needle, in a direction substantially aligned with a longitudinal axis of said inflation needle, said container being arranged to contain a plurality of lubricating particles formed at least partially of a solid lubricant wherein said particles and a mouth of the container which forms said opening are sized to prevent passage of said particles through said opening.

Suitably, said solid lubricant is comprised in an external surface of said lubricating particles.

Suitably, said solid lubricant at least partially comprises silicone.

Suitably, said lubricating particles comprise silicone beads.

5 Suitably, up to approximately 75% of said internal volume of said container is filled with silicone beads.

Suitably, said silicone beads are substantially spherical.

Suitably, said lubricating particles are resiliently flexible to facilitate passage of said lubricating particles through said opening upon resilient deformation of said
10 lubricating particles.

Alternatively, said container includes opening means for opening the container to enable capturing of said lubricating particles within said container.

Suitably, said opening means comprises a larger closeable opening which is closeable via closing means, said opening being arranged for passage
15 therethrough of said lubricating particles upon movement of said closing means to an open position.

Alternatively, said opening means may comprise a hinge.

In a third aspect the present invention provides a resiliently flexible lubricating particle formed at least partially of a solid lubricant, the resiliently
20 flexible lubricating particle being arranged for passage through said opening of said container of the first and second aspects of the present invention, upon application of a sufficient predetermined force to sufficiently deform said lubricating particles.

In a fourth aspect the present invention provides an inflation needle storage device comprising a body forming a passage which extends at least partly through the body, the passage being arranged for receipt of an inflation needle which is suitable for inflating articles having a resiliently flexible, substantially gas tight valve, the passage being arranged to receive the inflation needle so that a longitudinal axis of the inflation needle, when appropriately received within the passage, is substantially aligned with a longitudinal axis of the passage, the body including resiliently flexible retaining means which is arranged to form at least a portion of the passage, the resiliently flexible retaining means being arranged to resiliently deform upon insertion of the inflation needle into the passage so that it applies a predetermined force to an external surface of an inflation needle when it is inserted into the passage to result in the inflation needle being retained within the passage until predetermined forces are applied to the inflation needle and body to remove the inflation needle from said passage.

15 Suitably, said passage extends through said body.

Suitably, said passage is substantially circular in cross-section.

Suitably, said resiliently flexible retaining means comprises said body, said body being solid except for said passage and formed of resiliently flexible material such as high density foam rubber.

20 Suitably, said body is cylindrical in shape.

Suitably, a longitudinal axis of said passage is substantially aligned with a longitudinal axis of said body.

Suitably, said passage has a diameter which when undeformed is larger than a diameter of a portion of said inflation needle which is designed for passage through a resiliently flexible, substantially gas tight valve of a container which is designed for inflation with said inflation needle and smaller than an enlarged end of said inflation needle which is arranged for threadable connection to a pump.

Suitably, said body includes a plurality of said passages.

Suitably, said body comprises another passage, the other passage being larger in diameter than said passage and being arranged for passage of a flexible elongated member therethrough, said body being arranged to hang from a lower
5 end of said flexible elongated member upon supporting of said flexible elongated member.

In a fifth aspect the present invention provides an inflation needle storage device comprising a body having clamping means for clapping an inflation needle which is suitable for inflating containers having a resiliently flexible, gas tight valve,
10 relative to said body, said clamping means extending from said body and being arranged to move between a closed position in which an inflation needle is clamped between the clamping means and a portion of said body and an open position in which the inflation needle can be removed from said storage device, said clamping means being arranged to clamp an inflation needle around an
15 enlarged region of said inflation needle which is proximal an end of said inflation needle which is arranged for threadable connection to a pump.

Suitably, said body of said inflation needle storage device of the fifth aspect of the present invention and said clamping means comprise corresponding indentations which are arranged to at least partially enclose said enlarged section
20 of an inflation when said clamping means is in said closed position so that substantially movement of an inflation is prevented in a direction which is substantially aligned with a longitudinal axis of said inflation needle.

Suitably, said inflation needle storage device of the fifth aspect of the present invention further comprises detent means which is arranged to detain the
25 clamping means in said closed position.

Suitably, said clamping means comprises an arm which is pivotable relative to the body.

Suitably, said inflation needle storage devices of the fourth and fifth aspects of the present invention may each be suitable for use with the container of the first or second aspects of the present invention.

5 The inflation needle storage device of the fourth and fifth aspects of the present invention, and the container of the first and second aspects of the present invention, may each include corresponding attachment means for attachment of the inflation needle storage devices of the fourth or fifth aspects of the present invention and the container of the first or second aspects of the present invention together.

10 In a sixth aspect, the present invention provides a method of storing an inflation needle which is suitable for inflating containers having a resiliently flexible, substantially gas tight valve, the method comprising the step of:

15 inserting said inflation needle into a passage formed in a resiliently flexible body so that a longitudinal axis of said inflation needle substantially coincides with a longitudinal axis of said passage and said resiliently flexible body is at least partially resiliently deformed by the presence of an enlarged end of said inflation needle which, in use, is arranged for threadable connection to a pump, within said passage.

20 In the preceding summary of the invention and the claims which follow, except where the context requires otherwise, due to express language or necessary implication, the words "comprising", "comprises" or "comprise" are used in the sense of "including"; that is, the features specified may be associated with further features in various embodiments of the invention.

25 **Brief description of the drawings**

A preferred embodiment of the present invention will now be described, by way of example only, with reference to the following drawings in which:

Figure 1 is a perspective view of one example of an inflation needle lubricating container of the present invention formed in the shape of a football;

5 Figure 2 is a side elevational view of the football shaped inflation needle lubricating container of Figure 1;

Figure 3 is a plan view of the container of Figure 1;

Figure 4 is a longitudinal sectional view of the container of Figure 1 along line a-a of Figure 1.

10 Figure 5 is a plan view of a rubber grommet of the container of Figure 1;

Figure 6 is a side elevational view of the rubber grommet of Figure 5;

Figure 7 is a sectional view of the rubber grommet of Figure 5 through line b-b of Figure 5;

Figure 8 is a longitudinal sectional view similar to that of Figure 4 which
15 includes a longitudinal sectional view of one example of a pump and associated inflation needle with the inflation needle positioned external of the container and near the rubber grommet;

Figure 9 is a longitudinal sectional view of the container, and associated pump and inflation needle of Figure 8 with the inflation needle inserted through the
20 rubber grommet and into the container;

Figure 10 is a perspective view of one example of an inflation needle storage device;

Figure 11 is a longitudinal sectional view through line A-A of Figure 10;

Figure 12 is a plan view of the device of Figure 10;

Figure 13 is a perspective view of the device of Figure 10 with a cord inserted through a central bore of the device of Figure 10 which extends entirely
5 through the inflation needle storage device of Figure 10.

Figure 14 is a perspective view of the inflation needle storage device similar to that of Figure 13 with four inflation needles inserted into four outer bores of the inflation needle storage device of Figure 13.

Best mode of carrying out the invention

10 Referring to Figures 1-6, the inflation needle lubricating container 10 generally comprises a football shaped container 12 having an opening 14 and an attachment lug 16. The inflation needle lubricating container 10 also includes a cord 18 which is attached to the inflation needle lubricating container 10 via engagement of a clip 19 which is attached to the cord 18, and the lug 16. The cord
15 18 can, for example, be worn around a neck of a user and can also be used to enable the inflation needle lubricating container 10 to be hung up in a convenient location near a pump and associated inflation needle.

The football shaped container is hollow and, referring to Figure 8 is filled with wadding 20. The wadding 20 is designed to generally fill the internal volume
20 of the container 12. After the container 12 has been generally filled with wadding 20, a liquid lubricant (not shown) is poured into the container 12, through the opening 14. The liquid lubricant which is poured into the container 12 is absorbed by the wadding 20. The wadding therefore ensures that the liquid lubricant is dispersed throughout the container 12.

25 Referring to Figures 1-8, the container is orientated so that its longitudinal axis extends upwardly. The opening 14 is positioned near an upper end of the container 12. Referring to Figure 4, the opening 14 is formed by a mouth 22 of the

container 12. A rubber grommet 24 (see Figure 5-7) is attached to the mouth 22 of the container 12.

5 The rubber grommet 24 is a generally donut shaped rubber grommet. It includes a groove 26 having a square shaped cross section which is formed in an outer annular surface of the rubber grommet 24. The groove 26 is designed to receive an edge 28 of the mouth 22 of the container 12.

A central cylindrical blind passage 30 of the generally donut shaped rubber grommet 24 is prevented from extending through the rubber grommet 24 by a circular rubber sheet 32 which extends from an inner cylindrical surface 34 of the rubber grommet 24. The circular rubber sheet 32 is attached to the inner cylindrical surface 34 so that it extends across one end of the cylindrical blind passage 30. The circular rubber sheet 32 is attached to less than two thirds of the circumferential length around the inner cylindrical surface 34. An unattached region 42 (see Figure 5) is therefore free to resiliently flex to provide a passage 35 through the rubber grommet 24.

The rubber grommet 24 is attached, via the groove 26 to the mouth 22 of a container 12 so that the circular rubber sheet 32 is positioned inside a wall 43 of the container 12. Referring to Figure 9, by inserting an inflation needle 36 of a pump 38 into the cylindrical blind passage 30, an end 40 of the inflation needle 36 forces the unattached region 42 (see Figure 5) of the circular rubber sheet 32 into the container 12 to provide the passage 35 for passage therethrough of the inflation needle 36. In passing through the rubber grommet 24 the inflation needle 36 passes into the wadding 20. This results in an outer cylindrical surface of the inflation needle 36 being coated with lubricant.

25 Withdrawal of the inflation needle 36 from the container 12 results in the unattached region 42 of the rubber grommet 24 resuming its initial position where it seals against the inner cylindrical surface 34 of the rubber grommet 24 (see Figures 7 and 8). After withdrawal of the inflation needle 36 from the container 12 it is lubricated and ready for insertion through a valve of an inflatable article. When 30 the unattached region 42 of the circular rubber sheet 32 is in the closed position of

Figures 7 and 8 it generally seals against the inner cylindrical wall 34 of the rubber grommet 24 to prevent the passage of lubricant through the opening 14 of the container 12.

Referring to Figures 10-14, one example of an inflation needle storage device 43 comprises a cylindrical object 44 which is formed of high density foam rubber and having five bores 46, 48, 50, 52 and 54 which have longitudinal axes that are approximately aligned with a longitudinal axis of the cylindrical object 44. The bores 46-54 extend from an upper end of the cylindrical object 44, entirely through the longitudinal length of the cylindrical object 44 to a lower end. The bores 46-54 therefore exit either ends of the cylindrical object 44 via the upper and lower end surfaces 56 and 58 respectively of the cylindrical object 44.

The bore 46 is a central bore which is positioned within the cylindrical object 44 so that its longitudinal axis approximately coincides with a longitudinal axis of the cylindrical object 44. The bores 48-54 are positioned around the central bore 46 so that the axis of each of the bores 46-54 are substantially aligned and so that each of the bores 48-54 are approximately the same distance from the central bore 46. The bores 48-54 are positioned slightly closer to an outer cylindrical surface of the cylindrical object 44, than the central bore 46.

Referring to Figure 9, the diameters of the bores 48-54 are greater than the diameter of the end 40 (see Figure 9) of the inflation needle 36 and less than the diameter of an enlarged end 60 (which is designed to threadably engage the pump 38) of the inflation needle 36. An inflation needle 36 can be stored in one of the bores 48-54 of the cylindrical object 44 by inserting the end 40 of the inflation needle 36 of Figure 9 into an upper end of one of the bores 48-54. By inserting the end 40 of the inflation needle downwardly, along the longitudinal length of one of the bores 48-54, the enlarged end 60 of the inflation needle 36 abuts the upper end surface 56 of the cylindrical object 44. By applying downward pressure to the upper enlarged end 60 of the inflation needle 36, an upper end of one of the bores 48-54 is resiliently deformed and enlarged. Such deformation of the bore into which the inflation needle 36 is inserted results in the high density foam rubber

material of the cylindrical object 44 contracting around the upper enlarged end 60 of the inflation needle 36 to grip the inflation needle 36 and hold it firmly within the cylindrical object 44.

The diameter of the central bore 46 is greater than the diameter of the
5 bores 48-54 and is designed to enable passage therethrough of the cord 18 of Figure 1. By inserting the cord 18 through the central bore 46 of the cylindrical object 44, the cylindrical object 44 can be slid along the length of the cord 18 until it contacts the clip 19 (see Figure 1) which extends from the cord 18. The cylindrical object 44 is therefore positioned near the clip 19 and football shaped
10 container 12 so that when the cord 18 is positioned around a person's neck, the inflation needle storage device 42 and inflation needle lubricating device 10 hang downwardly.

An object such as a piece of wire having a hook extending from one end which is suitably dimensioned for passage through the central bore 46 may be
15 useful for drawing the cord 18 through the central bore 46.

It will be understood that the invention disclosed and defined in this specification extends to all alternative combinations of two or more of the individual features mentioned or evident from the text and/or drawings. All of these different combinations constitute various alternative aspects of the invention.
20 Various changes and modifications may be made to the embodiments described and illustrated without departing from the present invention.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A container adapted for lubricating an external longitudinal surface of an inflation needle which is suitable for inflating articles having a resiliently flexible, substantially gas tight valve, said container comprising an opening for passage
5 therethrough of at least a portion of the longitudinal length of said inflation needle, in a direction substantially aligned with a longitudinal axis of said inflation needle, and closure means for at least partially preventing passage of liquid or solid lubricant through said opening, said closure means being moveable from a closed position which at least partially prevents passage of liquid or solid lubricant
10 through said opening, to an open position to allow insertion of at least a portion of said inflation needle into said container via said opening, wherein, in said open position, said closure means is arranged to substantially allow equilibration of gas pressure within said container with gas pressure external of said container and at least partially prevent passage of liquid or solid lubricant through said opening,
15 while at least a portion of said inflation needle is inserted through said opening.
2. A container as claimed in claim 1 wherein said opening comprises a mouth of said container.
3. A container as claimed in claim 1 wherein said closure means comprises a sealing member having a resiliently flexible portion which is moveable
20 between said closed and open positions.
4. A container as claimed in claim 3 wherein said resiliently flexible portion is arranged to at least partially seal against a portion of said container and/or another portion of said sealing member, when in said closed position, to at least partially prevent passage of liquid or solid lubricant through said opening.
- 25 5. A container as claimed in claim 1 wherein said closure means comprises a valve.

6. A container as claimed in claim 5 wherein said valve is attached to said mouth of said container.
7. A container as claimed in claim 6 wherein said valve comprises a groove formed between two outwardly projecting flanges, said outwardly
5 projecting flanges being arranged to abut outer and inner surfaces of a wall of said container, adjacent said mouth of said container.
8. A container as claimed in any one of claims 5-7 wherein said valve further comprises a resiliently flexible flap which is arranged to move to said open
10 position upon application of predetermined force to provide an opening in said valve for passage therethrough of at least a portion of said inflation needle.
9. A container as claimed in any one of claims 1-8 wherein said container is at least partially filled with a liquid and/or solid lubricant.
10. A container as claimed in claim 9 wherein said solid lubricant comprises lubricating particles at least partially comprising a solid lubricant.
- 15 11. A container as claimed in any one of claims 1-8 wherein said container is at least partially filled with lubricant absorbent material which is arranged to absorb and therefore disperse a lubricant throughout at least part of an internal volume of said container.
12. A container as claimed in claim 9 wherein said container is at least
20 partially filled with liquid absorbent material which is arranged to absorb and therefore disperse said liquid lubricant throughout at least part of an internal volume of said container.
13. A container as claimed in claim 11 or claim 12 wherein said lubricant absorbent material includes wadding.
- 25 14. A container as claimed in any one of claims 1-8 further comprising particles which are arranged to fill at least a portion of said internal volume of said

container and disperse liquid and/or solid lubricant throughout at least a portion of said internal volume of said container.

15. A container adapted for lubricating an external longitudinal surface of an inflation needle which is suitable for inflating articles having a resiliently flexible substantially gas tight valve, said container comprising an opening for passage therethrough of at least a portion of the longitudinal length of said inflation needle, in a direction substantially aligned with a longitudinal axis of said inflation needle, said container being arranged to contain a plurality of lubricating particles formed at least partially of a solid lubricant wherein said particles and said opening are sized to prevent passage of said particles through said opening.

16. A container as claimed in claim 10 or claim 15 wherein said lubricating particles are resiliently flexible to facilitate passage of said lubricating particles through said opening upon resilient deformation of said lubricating particles.

17. A container as claimed in claim 10 or claim 15 further comprising opening means for opening said container to enable capturing of said lubricating particles within said container.

18. A container as claimed in claim 17 wherein said opening means comprises a larger closeable opening closeable via closing means, said opening being arranged for passage therethrough of said lubricating particles upon movement of said closing means to an open position.

19. An inflation needle storage device comprising a body forming a passage which extends at least partly through said body, said passage being arranged for receipt of an inflation needle which is suitable for inflating articles having a resiliently flexible, substantially gas tight valve, said passage being arranged to receive said inflation needle so that a longitudinal axis of said inflation needle, when appropriately received within said passage, is substantially aligned with a longitudinal axis of said passage, said body including resiliently flexible retaining means which is arranged to form at least a portion of said passage, said

resiliently flexible retaining means being arranged to resiliently deform upon insertion of said inflation needle into said passage so that it applies a predetermined force to an external surface of said inflation needle when it is inserted into said passage to result in said inflation needle being retained within
5 said passage until predetermined forces are applied to said inflation needle and said body to remove said inflation needle from said passage.

20. An inflation needle storage device as claimed in claim 19 wherein said resiliently flexible retaining means comprises said body, said body being solid except for said passage and formed of resiliently flexible material such as high
10 density foam rubber.

21. An inflation needle storage device as claimed in claim 19 or claim 20 wherein said passage has a diameter which when undeformed is larger than a diameter of a portion of said inflation needle which is designed for passage through a resiliently flexible, substantially gas tight valve of a container which is
15 designed for inflation with said inflation needle, and smaller than an enlarged end of said inflation needle which is arranged for threadable connection to a pump.

22. An inflation needle storage device as claimed in any one of claims 19-21 wherein said body includes a plurality of said passages.

23. An inflation needle storage device as claimed in any one of claims
20 19-22 wherein said body further comprises another passage, said other passage being larger in diameter than said passage and being arranged for passage of a flexible elongated member therethrough, said body being arranged to hang from a lower end of said flexible elongated member upon supporting of said flexible elongated member.

25 24. A method of storing an inflation needle which is suitable for inflating containers having a resiliently flexible, substantially gas tight valve, said method comprising the step of:

inserting said inflation needle into a passage formed in a resiliently flexible member so that a longitudinal axis of said inflation needle substantially coincides with a longitudinal axis of said passage and said resiliently flexible member is at least partially resiliently deformed by the presence of an enlarged end of said
5 inflation needle, which, in use, is arranged for threadable connection to a pump, within said passage.

Coach Flannigan Enterprises Pty Ltd
By their Registered Patent Attorneys
Freehills Carter Smith Beadle .

27 March 2002

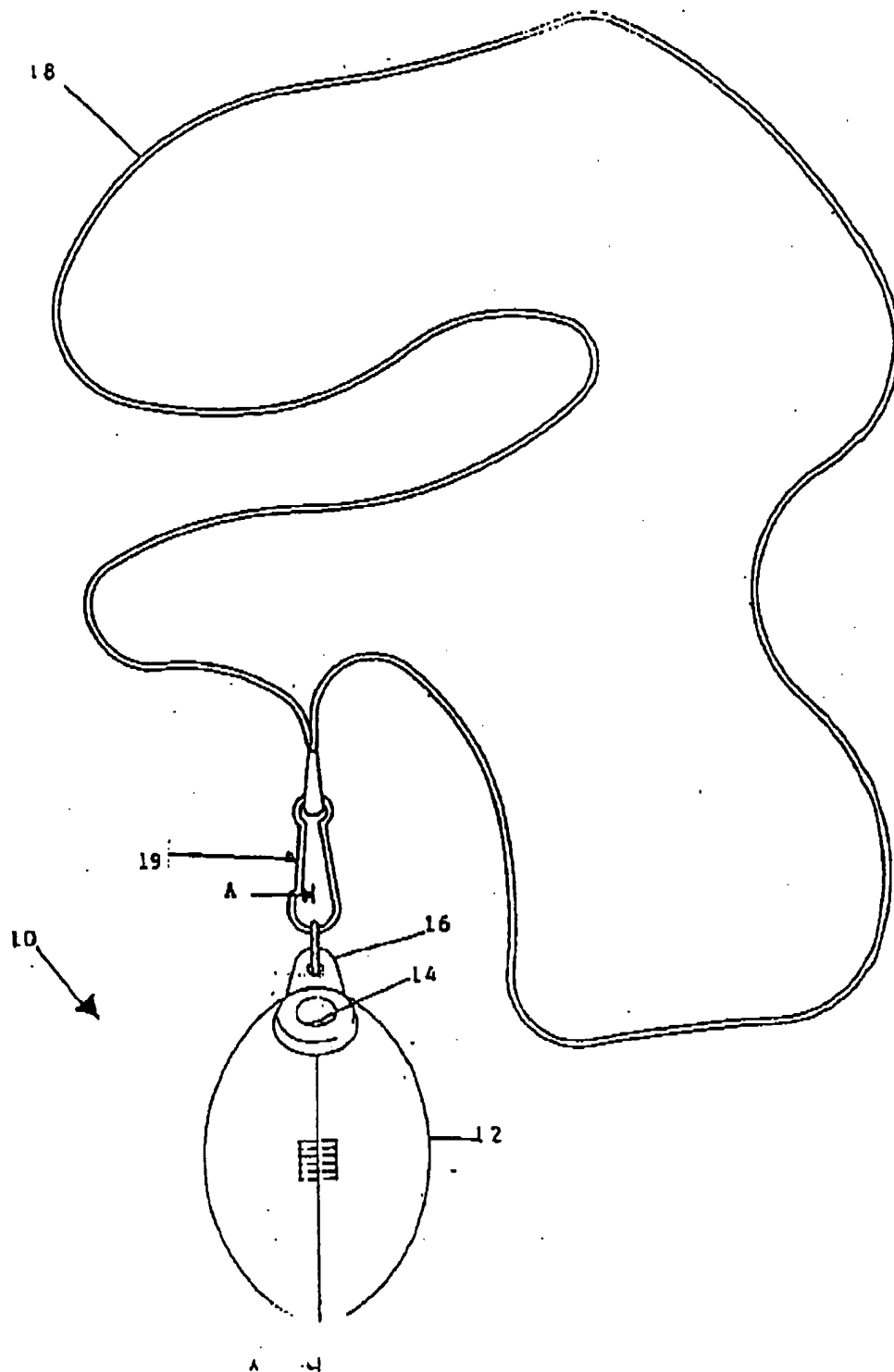


FIGURE 1

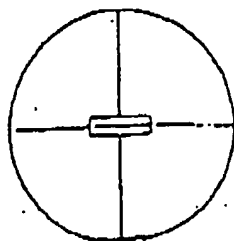


FIGURE 3

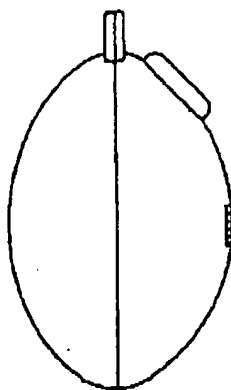


FIGURE 2

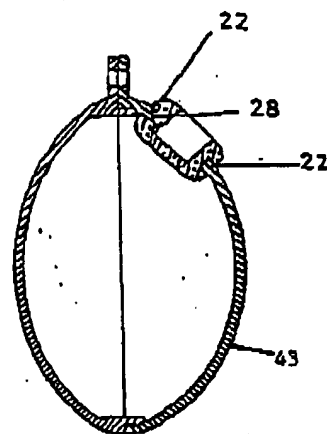


FIGURE 4

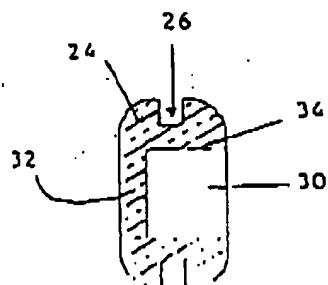


FIGURE 7

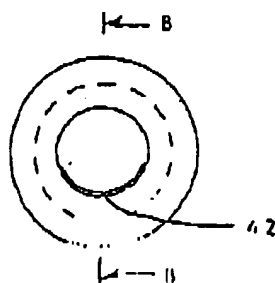


FIGURE 5

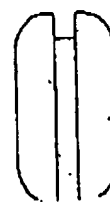


FIGURE 6

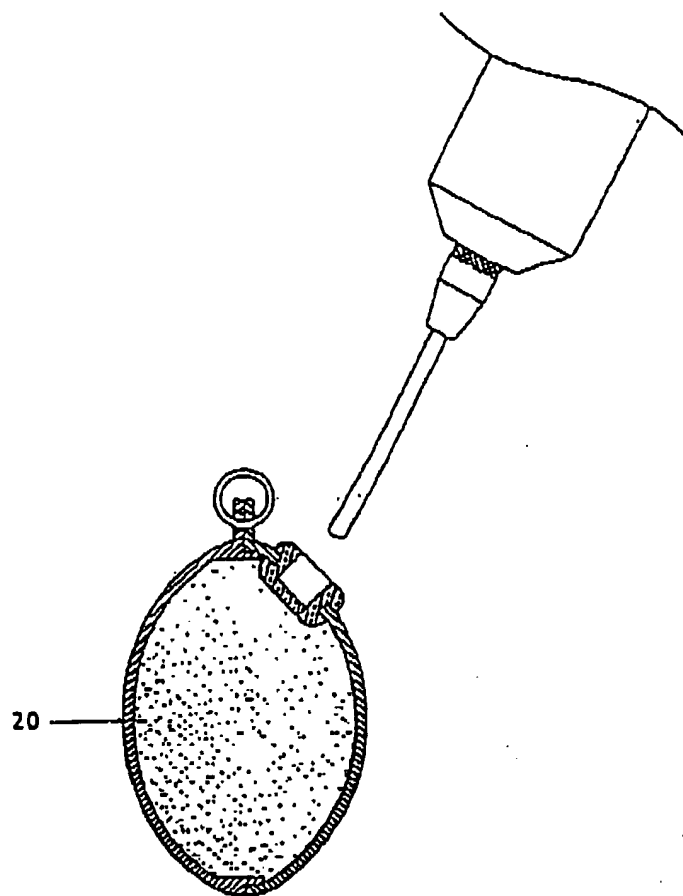


FIGURE 8

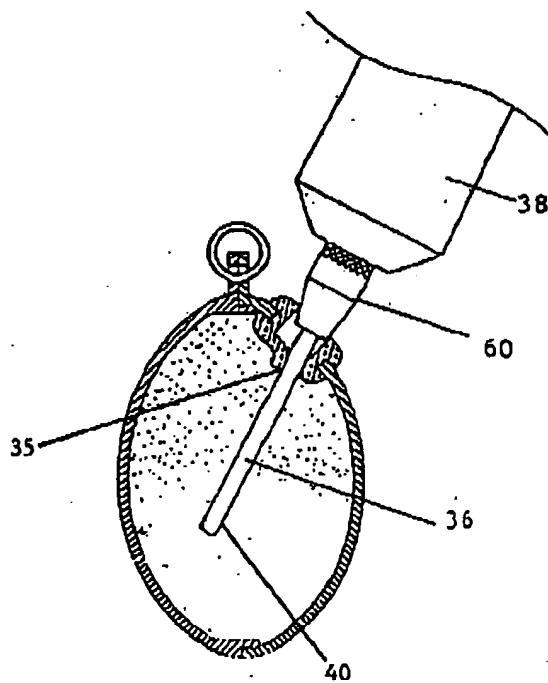


FIGURE 9

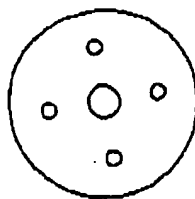


FIGURE 12

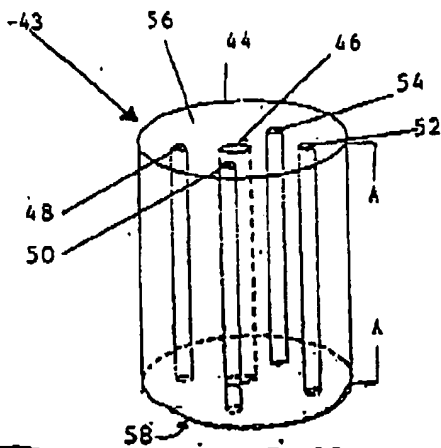


FIGURE 10

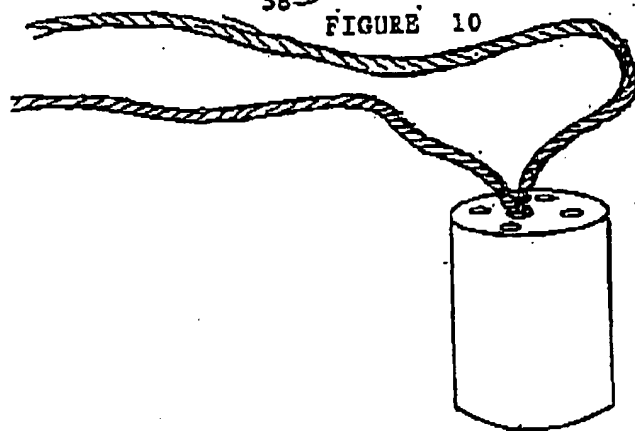


FIGURE 13

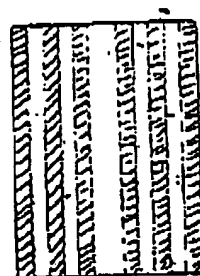


FIGURE 11

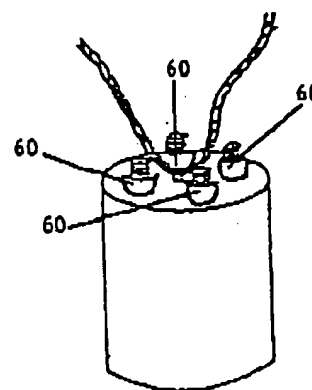
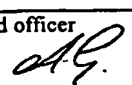


FIGURE 14

INTERNATIONAL SEARCH REPORT

 International application No.
PCT/AU02/00383

| A. CLASSIFICATION OF SUBJECT MATTER | | | | | |
|--|--|--|--|--|--|
| Int. Cl. ⁷ : B65D 30/10, 33/16, A63B 41/12 | | | | | |
| According to International Patent Classification (IPC) or to both national classification and IPC | | | | | |
| B. FIELDS SEARCHED | | | | | |
| Minimum documentation searched (classification system followed by classification symbols) | | | | | |
| REFER ELECTRONIC DATABASE CONSULTED BELOW | | | | | |
| Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched | | | | | |
| Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) | | | | | |
| DWPI IPC B65D, A63B 41/- & keywords: NEEDLE, PROBE, LUBRICATE, SILICONE, INSERT, RETAIN, HOLD, INFLATE, FLAP, VALVE, PASSAGE and similar terms | | | | | |
| C. DOCUMENTS CONSIDERED TO BE RELEVANT | | | | | |
| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. | | | |
| A | US 4568081 A (MARTIN) 4 February 1986 Abstract and figures | 1-18 | | | |
| A | US 5848946 A (STILLINGER) 15 December 1998 Abstract and figures | 1-18 | | | |
| A | FR 2752410 A (NAVARRO) 20 February 1998 Abstract and figures | 1-18 | | | |
| <input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex | | | | | |
| <table style="width: 100%; border: none;"> <tr> <td style="width: 33%; vertical-align: top;"> * Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed </td> <td style="width: 33%; vertical-align: top;"> "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family </td> <td style="width: 33%;"></td> </tr> </table> | | | * Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed | "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family | |
| * Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed | "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family | | | | |
| Date of the actual completion of the international search 24 May 2002 | | Date of mailing of the international search report 31 MAY 2002 | | | |
| Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustalia.gov.au Facsimile No. (02) 6285 3929 | | Authorized officer  ADRIANO GIACOBETTI Telephone No : (02) 6283 2579 | | | |

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU02/00383

| C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT | | |
|--|--|-----------------------|
| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
| A | US 5769682 A (DIRESTA et al.) 23 June 1998 Abstract and figures | 1-18 |

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU02/00383**Box I** Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos :
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos :
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos :
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

Box II Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

See supplemental sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1 to 18

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU02/00383**Supplemental Box**

(To be used when the space in any of Boxes I to VIII is not sufficient)

Continuation of Box No: II

The international application does not comply with the requirements of unity of invention because it does not relate to one invention or to a group of inventions so linked as to form a single general inventive concept. In coming to this conclusion the International Searching Authority has found that there are different inventions as follows:

1. Claims 1 to 18 are directed to a container adapted for lubricating an external longitudinal surface of an inflation needle. The container has a passage arranged to contain a solid lubricant and has an opening which is used for the insertion of a portion of the inflation needle. The lubricant is prevented from leaving the passage through the opening by its particular size or by having a closure means. It is considered that a container having a lubricant and an opening for insertion of a portion of an inflation needle comprises a first "special technical feature".
2. Claims 19 to 24 are directed to an inflation needle storage device (and associated method in claim 24) comprising a body with a passage for receipt of the needle and has a resiliently flexible retaining means or member which deforms by the presence of the needle. It is considered that the storage device having a passage formed in a resiliently flexible member or a passage having a resiliently flexible retaining means comprises a second "special technical feature".

Since the abovementioned groups of claims do not share any of the technical features identified, a "technical relationship" between the inventions, as defined in PCT rule 13.2 does not exist. Accordingly the international application does not relate to one invention or to a single inventive concept, a priori.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/AU02/00383

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

| Patent Document Cited in Search Report | | | | Patent Family Member | | | |
|---|---------|------|----------|----------------------|---------|----|---------|
| US | 4568081 | CA | 1213919 | DK | 1925/84 | GB | 2138015 |
| | | JP | 59205076 | | | | |
| US | 5848946 | NONE | | | | | |
| FR | 2752410 | BR | 9701871 | | | | |
| US | 5769682 | US | 5577723 | US | 5846116 | US | 5921840 |
| | | US | 6109998 | | | | |
| END OF ANNEX | | | | | | | |